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## (54). Encoded ticket processing apparatus

(57) Apparatus for processing an encoded ticket or voucher, eg a parking ticket, includes means for encoding a ticket or voucher presented thereto with machine readable data representative of a unique description of the ticket or voucher so presented and the time period during which it is valid. Means are provided for reading a ticket or voucher so encoded together with means for determining whether or not the encoded time period has expired, and if so, for displaying on the machine and/or the ticket voucher the fee required to extend the encoded time period to validate the ticket or voucher presented to the apparatus. In an alternative arrangement when the period of validity has not expired credit remaining can be transferred to a subsequently issued ticket or voucher.

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Machine Readable Tickets and Vouchers

This invention relates to machine readable tickets and vouchers and more especially but not exclusively to machine readable tickets and vouchers for use by motorists when parking in, for example, pay and display parking areas.

A pay and display parking system is one in which a motorist purchases parking time from a ticket issuing payment machine located within a parking area and displays on his or her vehicle a ticket or voucher which specifies the date and time of purchase and the amount of time which the motorist has elected to purchase. Alternatively, the ticket or voucher may display the date and time up to which payment has been made.

The validity and authenticity of the ticket displayed are normally checked by a roving attendant authorised to issue excess payment vouchers for out-of-time or illegal

parking.

Advantages of pay and display systems include that a motorist is not delayed on entry to and exit from a car park or other parking area and that the labour and capital costs required to install, operate and service a pay and display system are less than with other parking systems.

Pay and display parking systems suffer, however from one major disadvantage, this being that the motorist must decide when purchasing his parking ticket or voucher how long he intends his vehicle to remain in the parking area knowing that if this time is extended he will be subject to a fine or penalty.

One object of this invention is to overcome this particular disadvantage of pay and display systems.

In accordance with the present invention in one aspect there is provided a ticket or voucher encoded electronically with machine readable data representative of a unique description of the ticket or voucher and the time during which it is valid.

In another aspect, there is provided apparatus for electronically encoding a ticket or voucher with machine readable data, the apparatus including means for encoding a ticket or voucher presented thereto with machine readable data representative of a unique description of the ticket or voucher so presented and the time period during which it is valid, means for reading a ticket or voucher so encoded, and means for determining whether or not the encoded time period has expired and, if so, for displaying on the

machine and/or the ticket or voucher the fee required to extend the encoded time period to validate the ticket or voucher presented to the apparatus.

The unique description of the ticket may simply be a unique number and may include the date and/or time of issue.

A further disadvantage with pay and display parking systems is that many ticket or voucher issuing machines employed in such systems are programmed only to accept certain denominations of coinage and fail to provide change if an over payment has to be made because a motorist does not have the necessary coins to match exactly the fee to be paid.

In a further aspect, the invention provides a machine readable ticket or voucher encoded to include a credit in respect of any overpayment made when purchasing a ticket or voucher, the encoded ticket or voucher being usable on a subsequent occasion as partial payment for a ticket or voucher.

In a still further aspect, the invention provides apparatus for electronically encoding a ticket or voucher with machine readable data, the apparatus including means for encoding a ticket or voucher presented thereto with machine readable data representative of any over-payment made when purchasing said ticket or voucher, means for reading a ticket or voucher so encoded presented to the apparatus, and means for reducing the cost of a ticket or voucher purchased immediately following presentation of the

previously encoded ticket or voucher by an amount equivalent to the value of over-payment recorded on the previously presented ticket or voucher.

As mentioned previously, with current pay and display parking systems a motorist has to judge when purchasing a parking ticket how long his vehicle will be parked knowing that if he has purchased insufficient parking time he will be subject to a penalty which can be, and frequently is, excessive. A situation exists, therefore, where a motorist believing that he will only be parking for two hours in a car park where the tariff is 50p an hour may well be faced with a total cost as high as £27 if in fact he remains in that car park for two and a half hours. This compares with a situation where a motorist more able to assess the length of his stay in the car park in question will purchase a three hour ticket for only £1.50. The only error made by the former motorist was to underestimate the length of his stay in the car park. Often, the reason for the delay in the motorist returning to the car park is not of his making.

In accordance with the present invention, a pay and display parking ticket or voucher incorporates machine readable information typically in the format of magnetically encoded data or a bar code. At the point when the pay and display ticket or voucher is issued by the respective machine, machine readable information is encoded into the ticket or voucher representative of a unique description of that ticket (eg a unique number) and its

time of expiry. The ticket or voucher may also contain other information such as the date and time of issue and/or the machine number or car park in which it was issued. The ticket or voucher is then displayed on the respective vehicle in the normal way.

If on returning to his vehicle, the motorist finds that he has received an excess charge or penalty notice he is able simply to take his original ticket to a pay and display machine and insert it into a ticket reader. This ticket reader may be the same as the original ticket encoder. The machine duly reads the pre-encoded information, computes any additional parking charge required to validate the ticket to enable the motorist to pay the additional charge and receive a receipt detailing the original ticket number, the date and time of issue of the receipt and the amount paid. Alternatively, if the original ticket issue encoder and printer is utilised, the original ticket may be overprinted with this information.

Details of excess payments made are stored in the pay and display machine and transferred at some later time either electronically or on hard copy to enable the information to be compared with details of excess charge notices issued by parking attendants. Those excess charge notices settled by the procedure outlined above can then be cancelled. In a preferred form the data transfer is effected electronically as an automatic function of a computerised parking fine management system.

Alternatively, an excess charge or penalty notice

issued by a parking attendant is encoded with machine readable information comprising the excess charge ticket number and time of expiry of the original ticket. The motorist on return to his vehicle simply inserts the excess charge notice into a machine which reads the encoded information to enable the motorist to make an appropriate payment and to receive a certified receipt in a manner similar to that described previously.

A ticket or voucher issued by a pay and display machine may additionally or alternatively provide an electronic change giving facility for occasions when for example a motorist wishes to purchase a 60p ticket but only has a £1 coin to insert into the pay and display machine. In such circumstances the ticket or voucher issued by the machine incorporates in machine readable format a 40p credit which is also preferably printed on the ticket to indicate that such a credit is available. The motorist when next purchasing a pay and display ticket simply then inserts the encoded old ticket in order to transfer the credit to the machine partially to pay for the ticket then being purchased.

It will be understood that the foregoing is merely exemplary of machine readable tickets and vouchers in accordance with the invention and that modifications can readily be made thereto without departing from the true scope of the invention.

CLAIMS

1. Apparatus for electronically encoding a ticket or voucher with machine readable data, the apparatus including means for encoding a ticket or voucher presented thereto with machine readable data representative of a unique description of the ticket or voucher so presented and the time period during which it is valid, means for reading a ticket or voucher so encoded, and means for determining whether or not the encoded time period has expired and, if so, for displaying on the machine and/or the ticket or voucher the fee required to extend the encoded time period to validate the ticket or voucher presented to the apparatus.

2. A ticket or voucher encoded electronically with machine readable data representative of a unique description of the ticket or voucher and the time during which it is valid.

3. A ticket or voucher as claimed in claim 2 wherein the unique description of the ticket is a unique number and may include the date and/or time of issue.

4. Apparatus for electronically encoding a ticket or voucher with machine readable data, the apparatus including means for encoding a ticket or voucher presented thereto with machine readable data representative of any over-



payment made when purchasing said ticket or voucher, means for reading a ticket or voucher so encoded presented to the apparatus, and means for reducing the cost of a ticket or voucher purchased immediately following presentation of the previously encoded ticket or voucher by an amount equivalent to the value of over-payment recorded on the previously presented ticket or voucher.

5. A machine readable ticket or voucher encoded to include a credit in respect of any overpayment made when purchasing a ticket or voucher, the encoded ticket or voucher being usable on a subsequent occasion as partial payment for a ticket or voucher.

6. Apparatus for electronically encoding a ticket or voucher substantially as herein described.

**Patents Act 1977**  
**Examiner's report to the Comptroller under Section 17**  
 ( Search report)

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**Relevant Technical Fields**

- (i) UK CI (Ed.M) G4T (TAD TAE TAF TAX)  
 (ii) Int CI (Ed.5) G07B 15/02 15/04

Search Examiner  
 G NICHOLLS

Date of completion of Search  
 14 MARCH 1994

**Databases (see below)**

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

Documents considered relevant following a search in respect of Claims :-  
 1 AND 6

(ii) ONLINE DATABASE: WPI

**Categories of documents**

- X: Document indicating lack of novelty or of inventive step. P: Document published on or after the declared priority date but before the filing date of the present application.
- Y: Document indicating lack of inventive step if combined with one or more other documents of the same category. E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.
- A: Document indicating technological background and/or state of the art. &: Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages	Relevant to claim(s)
X	GB 2071380 A (OMRON TATEISI) see especially page 2 lines 15 to 50	1

**Databases:**The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).